SECTION II

HEALTH SYSTEMS REQUIRING TECHNOLOGICAL INTERVENTIONS:

A. CARDIOVASCULAR

B. GASTROINTESTINAL

C. GENITOURINARY

D. MUSCULO-SKELETAL

E. NERVOUS

F. RESPIRATORY

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CARDIOVASCULAR

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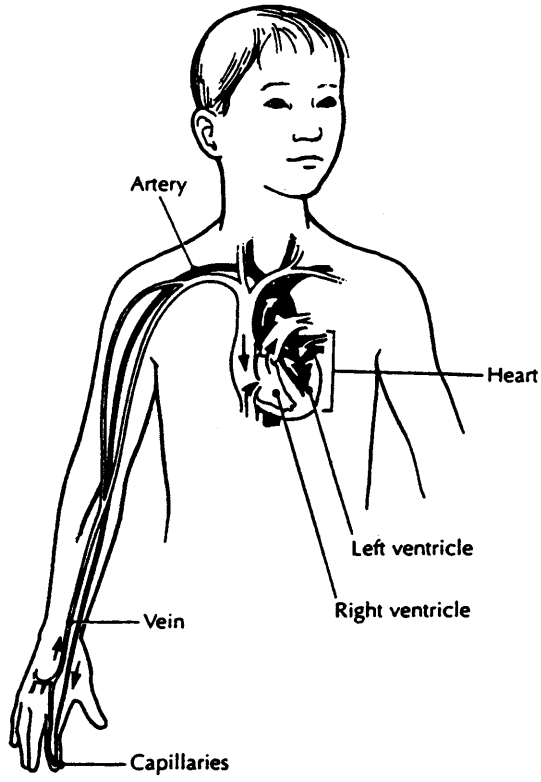
Circulatory System[1]

STRUCTURE AND FUNCTION

The circulatory system delivers oxygen and nutrients to different organs of the body and transports carbon dioxide and waste products to the lungs and kidneys for elimination.

The *heart* is a four-chambered pump that is physiologically divided into two sides. The atria are the small collection chambers that collect blood from the veins. The ventricles are the larger, more muscular chambers that pump blood through the arteries.

The right side of the heart collects blood returning from the body via the large veins (i.e., the vena cavae) in the right atrium. The blood then enters the right ventricle through a valve and is pumped to the lungs through the pulmonary artery, where it loses carbon dioxide and gains oxygen.



The oxygenated blood from the lungs enters the left atrium through the pulmonary veins. It then crosses a valve into the left ventricle, which pumps the blood out to the body through the aorta.

The *arteries* are blood vessels with muscular walls that take the blood from the heart to organs in the body. The largest artery, the aorta, is closest to the heart. As the arteries get farther away from the heart, they become smaller with less muscle in their walls.

The *capillaries* are tiny channels, one–blood-cell wide, that connect arteries to veins. These vessels are where the exchange of oxygen and nutrients with carbon dioxide and waste products occurs in every organ.

The *veins* are thin blood vessels that take blood away from the organs toward the heart. Some veins in arms and legs have one-way valves that keep the blood from pooling in the hands and feet. As the veins get closer to the heart, they become larger. Central veins are those inside the abdominal or chest cavities.

Central Venous Catheter

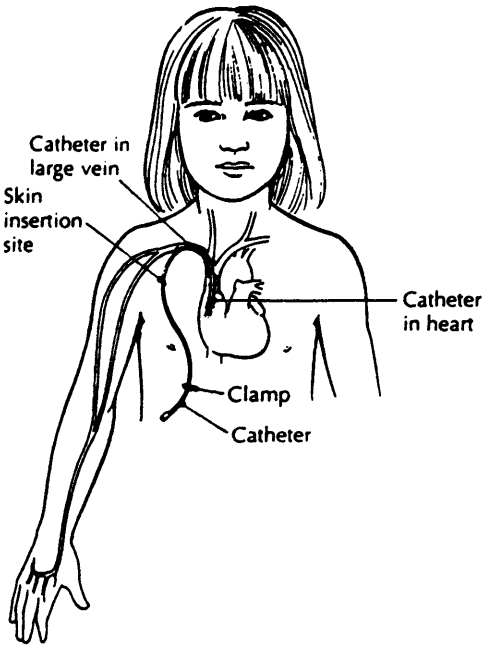
PURPOSE

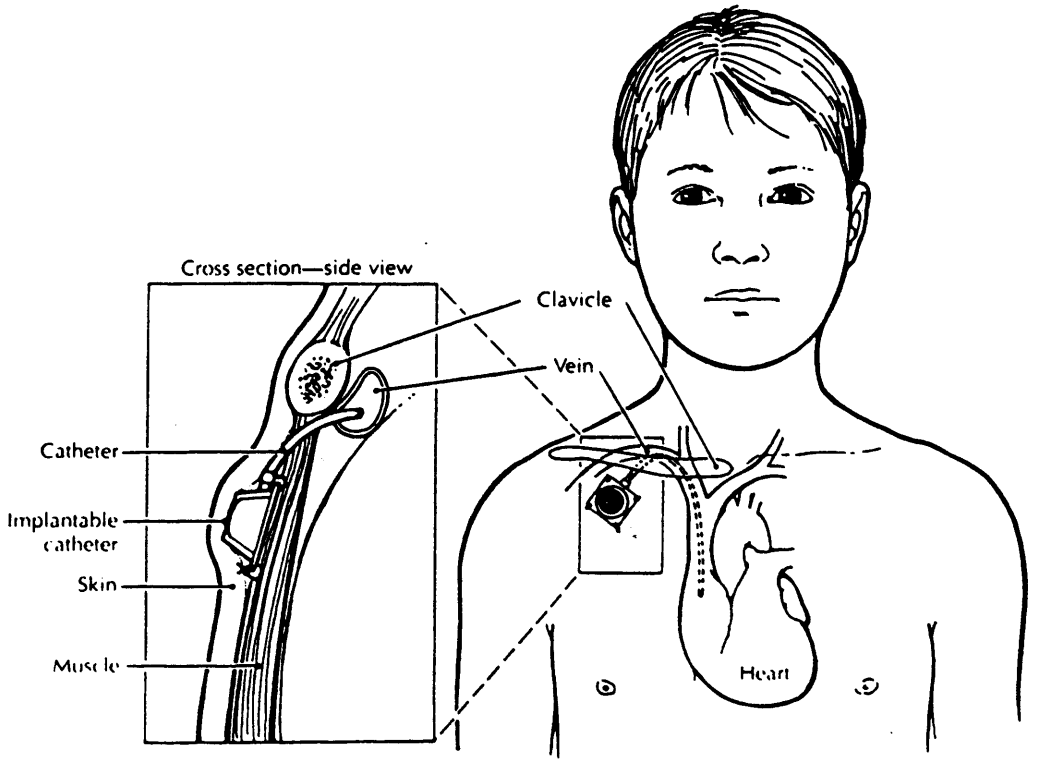
A central venous catheter (CVC) is a long-term intravenous line that is inserted surgically into a deep, large vein in the neck or the chest, usually near the heart. The middle portion of the catheter has a Dacron cuff that anchors the catheter under the skin. This cuff also helps to prevent bacteria from traveling up the catheter. The clamp or cap on the end of the tubing prevents blood loss and air entry into the vein. CVCs do not cause any discomfort if they are properly secured.

The exit site (i.e., where the catheter comes out of skin) requires meticulous cleaning and always is covered with a sterile dressing. Usually the dressing is on the upper chest area. On occasion, the exit site for the CVC is on the abdomen or groin.

Some students may have a type of CVC that has an access site (or port) that is entirely covered by the skin. This is the implanted type of CVC, and students with this type of CVC will not have an exit site.

Students usually have CVCs when they have a need for long-term delivery of intravenous food and/or medication. These students may be receiving chemotherapy, total parenteral nutrition (TPN), or antibiotic therapy.





SUGGESTED SETTINGS

As with all medical conditions, every effort should be made to protect the student's privacy. Procedures such as dressing reinforcements or changes should be carried out in a private area of the health office. Because CVCs usually are covered by clothing, students with CVCs should be able to participate in school activities. However, participation in physical education activities should be decided on an individual basis and approved by the student's physician.

SUGGESTED PERSONNEL AND TRAINING

A health assessment must be completed by the school nurse. State nurse practice regulations must be consulted for guidance on delegating health care procedures.

Dressing changes should be performed by a registered nurse with proven competency-based training in appropriate techniques and problem management. Any school personnel who have regular contact with a student who has a CVC must receive general training that covers the student's specific health care needs, potential problems, and how to implement the established emergency plan.

The basic skills checklist on pages 9-10 can be used as a foundation for competency-based training in appropriate techniques. It outlines specific procedures step by step. Once the procedures have been mastered, the completed checklist serves as documentation of training.

THE INDIVIDUALIZED HEALTH CARE PLAN: ISSUES FOR SPECIAL CONSIDERATION

Each student's IHCP must be tailored to the individual's needs. The following section covers the procedure for CVC dressing change as well as possible problems and emergencies that may arise. It is essential to review it before writing the IHCP.

A sample IHCP is included in this manual . It may be copied and used to develop a plan for each student. For a student with a CVC, the following items should receive particular attention:

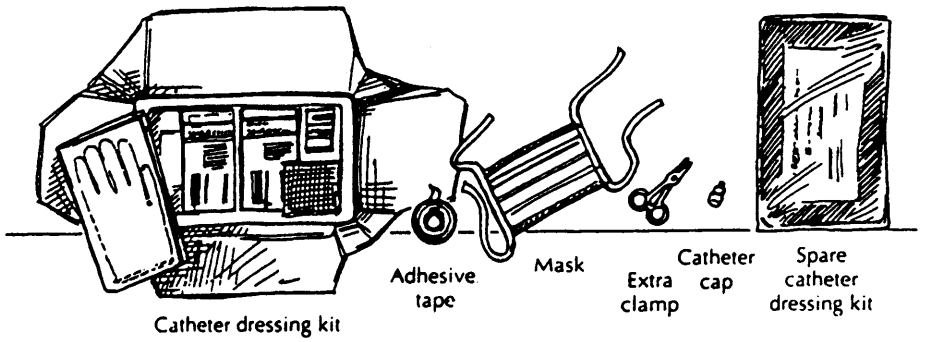
- The student's underlying condition and potential problems associated with the condition or treatment (e.g., chemotherapy)
- The need for an additional sterile dressing kit with a spare clamp and heparin readily available at all times
- Notification about CVC to school staff who have regular contact with the student
- Reports of any fever to the family or primary physician
- Proper hand washing before and after handling CVC or dressing
- Whether dressings should be changed under sterile conditions
- Determination of when and under what conditions the tubing or the dressing should be handled
- Steps to be taken if a complication occurs (e.g., saline flush, use of heparin)
- Prescribed dosage for heparin flush
- Latex allergy alert
- Universal precautions (Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and student.) [2]

Possible Problems that Require Immediate Attention

Equipment Needed for Emergencies

Points to Remember

Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and the student.



- Smooth-edged clamp
- Sterile gauze
- Adhesive tape
- Sterile gloves (optional)
- Alcohol swabs
- Betadine swabs
- Dressing kit
- Mask
- Heparinized syringe
- Normal saline (sterile)

Observations	***Reason/Action***
Blood in the tubing or bleeding from the end of the tubing	*Whenever blood is present, gloves should be worn. Most students will have their CVCs capped while they are in school. If blood is noted in the line or coming from the end of the line,* ***check to see if the clamp is open.*** *If so, close the clamp. Transfer the student to the health office. The catheter may need to be flushed with saline and instilled with heparin if doing so is indicated in the student's IHCP. Notify the family.*
	If the clamp has broken or is not functioning properly, the tubing should be firmly pinched closed or clamped and the physician and family contacted immediately. ***Activate the emergency plan.***
Development of a fever, redness at the CVC site, drainage, increased fatigue, irritability, or headache	*The family and/or physician should be called at once. These are indications of infection.*

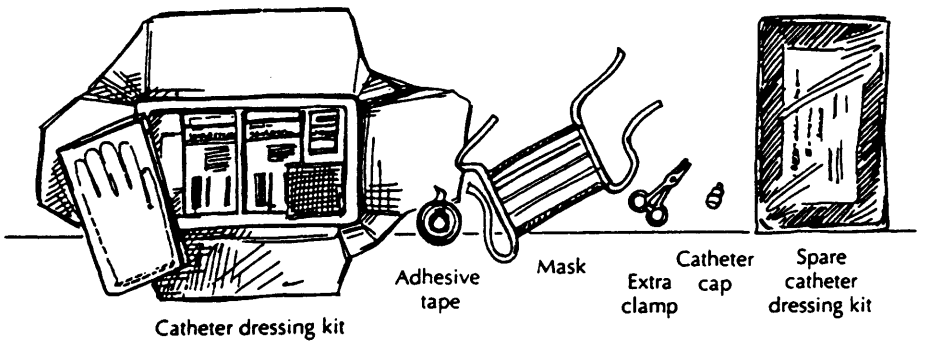
CVC is pulled or falls out	*Stay calm.* ***Reassure the student.*** *Whoever is at the site first should cover the CVC exit site with sterile gauze, if immediately available, or clean dressing.*
	Inspect the exterior of the dressing. If the dressing is intact and the tape still holds the looped catheter, it is probable that no significant trauma to the student or the line has occurred. The family and the physician should be notified anyway.
	If the tape or dressing has been disrupted, they should be taken off and the exit site inspected.
	If the catheter has fallen out, apply firm pressure to the exit site (bleeding should be minimal). Notify the physician and family immediately. ***Activate the emergency plan.***
Catheter tubing is broken	*Clamp the catheter above the break. Notify the school nurse, who will wrap the broken end with a sterile gauze. Notify the family and physician immediately.* ***Be prepared to initiate the emergency plan.***
	The catheter usually can be repaired by the physician at the hospital.
Student complains of chest pain or difficulty in breathing	*Have the student lie on his or her left side until the line is clamped. This helps to prevent an air bubble from entering the heart.*
	Once the tubing is securely clamped and not leaking, transport the student via wheelchair to the school nurse's office. ***Do not let the student walk.***
	Initiate the emergency plan. The student should be transported as soon as possible to the appropriate hospital emergency room. If the school nurse is not available, pinch the tubing with a clamp or fingers and call the emergency medical team. Notify the family and physician immediately. 3

PROCEDURE FOR CVC DRESSING CHANGE

PROCEDURE

1. Wash hands.

2. Assemble equipment (i.e., catheter dressing kit):



Catheter dressing kit

- Mask
- Sterile gloves
- Alcohol swabsticks
- Povidone iodine swabsticks or student-specific cleansing supplies
- Povidone ointment or student-specific antibacterial ointment
- Sterile gauze
- Transparent occlusive dressing
- Adhesive tape

Also needed:

- Extra clamp
- Catheter cap
- Spare catheter dressing kit
- 3-cc syringe for normal saline

3. Explain the procedure to the student according to his or her level of understanding.
4. Put on the mask.
5. Wash hands.

6. Assist the student in removing clothing to uncover the dressing.
7. Position the student.

8. Open the catheter dressing kit on a clean work surface.

9. Remove wet or soiled dressing from the catheter exit site.

POINTS TO REMEMBER

Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and student.

Dressing change should be performed in a private area of the health office.

Identify the size and type of central venous catheter.

Different dressing kits may be used that do not contain all of these components. Those items not included in the kit should be supplied separately.

By encouraging the student to assist in the procedure, the caregiver helps the student achieve maximum self-care skills.

Because putting on a mask involves touching the hair, a second hand washing is necessary.

The student may be sitting or lying flat. Have the student turn the head to the side while the catheter is exposed. Avoid having the student breathe on the catheter site.

*Although not all CVC dressing changes are done using sterile procedures, students receiving TPN **do** have sterile dressing changes.*

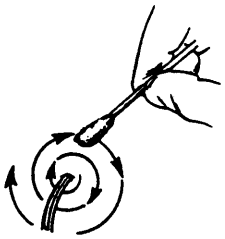
Discard the dressing in the appropriately marked biomedical waste container.

10. Inspect the skin around the catheter for redness, swelling, or fluid drainage.

This may be a sign of infection. If any of these symptoms are evident, notify the physician and the family.

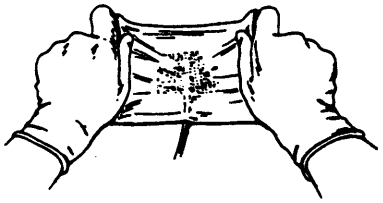
11. Put on sterile gloves.
12. Clean the skin with an alcohol swabstick, starting at the center next to the catheter and working outward in widening circles. Repeat the cleaning process two more times, for a total of three cleansings.

Start at the exit site.
Be sure to minimize movement of the catheter. This will help decrease skin trauma, thereby decreasing risk for infection. Allow the alcohol solution to dry for approximately 30 seconds.



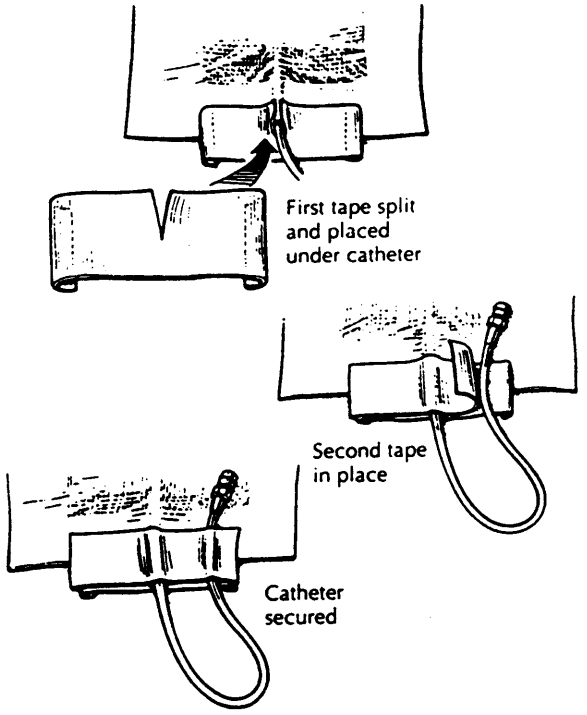
13. Repeat Step 12 using povidone iodine swabsticks. Allow the povidone iodine to dry for about 30 seconds before proceeding.
14. Gently pat the skin dry with sterile gauze.
15. Apply a small dab of antibacterial ointment to the catheter exit site.
16. Lay the gauze over the ointment on the catheter exit site.
17. Using a layer of transparent dressing or other type of dressing indicated in physician's order, cover the gauze and secure the dressing to the skin.

Iodophor solutions require at least 30 seconds to maximize antibacterial and antifungal action.



18. Using tape, secure the catheter at a second point to reduce strain on the catheter:
    - Place the first piece of tape as shown.
    - Place a second piece of tape over the first, sealing it along the catheter.
    - Secure the catheter with the free end of tape.

This may be done in a manner other than that illustrated.



19. Remove gloves and mask. Dispose of gloves and supplies appropriately.
20. Wash hands.
21. Document procedure and problems on the log sheet.

Report to the family any changes in the student's usual pattern of tolerating the procedure as well as any unusual drainage.

22. Write date and time of dressing change on dressing. [4]

Student's name: _____

Person trained: _____

Position: _____

Central Venous Catheter Dressing Change
Skills Checklist

Instructor: _____

Explanation/Return Demonstration	Expl./ Demo. Date	Explanation/Return Demonstration					
		Date	Date	Date	Date	Date	Date
A. States name and purpose of procedure							
B. Preparation:							
1. Identifies student's ability to participate in procedure							
2. Reviews universal precautions							
3. Identifies catheter placement and exit site							
4. Identifies CVC catheter type and parts							
5. Identifies where procedure is done (respects privacy)							
6. Identifies possible problems and appropriate actions							
C. Identifies supplies:							
1. Dressing kit:							
a. Sterile gloves							
b. Alcohol swabsticks							
c. Povidone iodine swabsticks or student-specific cleansing supplies							
d. Povidone ointment or student-specific antibacterial ointment							
e. Sterile gauze							
2. Adhesive tape							
3. Mask							
4. Transparent occlusive dressing							
5. Spare clamp							
6. Catheter cap							
7. Spare catheter dressing kit							
8. 3-cc syringe for normal saline							
D. Procedure:							
1. Washes hands							
2. Assembles equipment							
3. Positions student and explains procedure							
4. Puts on mask							
5. Washes hands							
6. Arranges equipment							
7. Removes wet or soiled dressing							
8. Inspects exit site							

5

(continued)

Format adapted from Children's Hospital Chronic Illness Program, Ventilator Assisted Care Program. (1987). *Getting it started and keeping it going: A guide for respiratory home care of the ventilator assisted individual.* New Orleans, LA: Author; adapted by permission.

Central Venous Catheter Dressing Change
Skills Checklist

Student's name: _____

Explanation/Return Demonstration	Expl./ Demo. Date	Explanation/Return Demonstration					
		Date	Date	Date	Date	Date	Date
9. Puts on sterile gloves							
10. Cleanses skin with alcohol swabs 3 times and allows solution to dry 30 seconds							
11. Cleanses skin with povidone swabs 3 times and allows povidone to dry about 30 seconds							
12. Dries skin with sterile gauze							
13. Applies antibacterial ointment to site							
14. Places sterile gauze over ointment							
15. Covers gauze with sterile dressing							
16. Secures catheter with tape							
17. Disposes of gloves, mask, and supplies appropriately							
18. Washes hands							
19. Documents procedure and observations							
20. Writes date and time of dressing change on dressing							
21. Reports any changes to family							

Checklist content approved by:

Parent/Guardian signature _____ Date _____

Totally Implanted Central Venous Catheters: General Information (Port-A-Catheter or Infusa Port)

I. Purpose

The Totally Implanted Devices (no exit site on skin) are composed of a metal or plastic reservoir and have a self sealing injection port with a pre-connected or attachable silicon catheter that is surgically placed in a large blood vessel.

A Totally Implanted Device or "Port" can be used for IV injection and infusions as well as blood sampling.

II. Individualized Health Care Plan: Issues for Special Consideration

Each student's Individualized Health Care Plan (IHCP) must be tailored to individual needs. A sample of the IHCP and Anticipated Health Crisis Plan are found in Appendix A. These may be copied and used to develop a plan for each student. The following covers safety consideration and implications for the school nurse as the plan is being developed:

- Ports should not be used with chemicals that are incompatible with component materials.
- To date effects of direct pressure from seat belt restraint or a wheelchair harness in an accident is unknown.
- Catheter may dislodge from port especially if student "plays" with port site (Twiddler's syndrome).
- A special non coring needle with an angled tip is required for injection into port.
- Different types of port designs will require carefully reading and following the manufacturer's instructions re: accessing the port.
- When giving a medication IV push which has the potential for spilling into surrounding tissue, frequent checks for patency should be done.
- Latex Allergy Alert
- Universal Precautions

III. Special Considerations

A. Ports are more difficult to access than CVC's.
B. Ports require piercing the skin for access, a local anesthetic may be used to prevent discomfort.
C. Ports are harder to manipulate for self-administration.
D. Ports are more complex to remove.
E. No dressing is required.
F. There is reduced risk of infection.
G. Because the device is placed completely under the skin, it is not easily damaged and can't be pulled out.
H. There will be a slight bulge over the site on the chest but generally enhances student acceptance and increases self-esteem.

IV. Activity Level with Totally Implanted CVC's

A. There are no limitations on most physical activity including swimming.

B. Vigorous contact sports or direct pressure on the device is not allowed.

Accessing/Flushing Totally Implanted CVC Services (Never Delegate)

Procedure	Points to Remember
1. Wash hands	*Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and student.* *Provide privacy*
2. Assemble equipment Catheter dressing kit or equivalent contains: • Sterile gloves • Alcohol or iodine swab sticks • Syringe with special needle • Medication to be infused • Heparinized saline (10-100 IU/ml) Optional: • Local anesthetic	*Different dressing kits may be used that do not contain all of these components. Those items not included in the kit should be supplied separately.*
3. Explain the procedure to the student according to his/her level of understanding.	
4. Assist student to remove clothing.	
5. Position the student.	*The student may be sitting or lying flat.*
6. Cleanse the port site area. Do not go over the same spot twice with the same swab.	
7. Anesthetize the site for needle puncture if ordered.	
8. Put on sterile gloves.	
9. For IV infusion: by palpation using sterile technique, locate the port site septum.	
10. Connect the syringe or IV set to the special port needle.	
11. Puncture the skin immediately over the port site septum and advance the needle slowly until it makes contact with the bottom of the port reservoir.	*To avoid injection into subcutaneous tissue, insert the needle through the septum to the bottom of the reservoir.*

Note: The self-sealing septum of the port will allow numerous (1-2000) punctures.

To avoid damage to the septum do not tilt or rock the needle once the septum is punctured.

12. Initiate the injection or infusion.

Maintain positive pressure when withdrawing the needle.

13. Flush with 5 ml of heparinized saline after each injection or infusion.

To maintain patency of system it should also be flushed a minimum of once a month with heparinized saline.

14. Discard gloves & wash hands

15. Document procedure on student log

General Information Sheet

Students with Central Venous Catheters

Dear (teacher, lunch aide, bus driver):

_____ [Student's name] has a condition that requires a central venous catheter (CVC). This is a plastic tube, like an IV, that has been placed by a surgeon into a large vein close to the heart. A student may have a CVC if he or she is unable to digest food or requires special medications. The tubing usually comes out of the skin on the chest. The exit site is covered by a bandage to protect it and to keep the tubing clean. The CVC does not cause any discomfort if it is secured properly. If the student has an implantable catheter, the tubing will not be visible.

Some students will have the tubing connected to an intravenous fluid solution, but most will have the CVC capped or clamped while they are in school or in transport. In most cases, routine CVC care will be carried out at home or in the health room, unless an emergency occurs.

Most students with CVCs are able to participate in school activities. Participation in physical education and any restrictions must be determined by the physician and the family. Students with CVCs should avoid having the exit site bumped or the tubing pulled.

The CVC is covered by a bandage as well as the student's clothing. No one should touch the tubing or dressing unless a complication occurs. All staff who have contact with students with CVCs should be familiar with the emergency plan and how to initiate it.

The following staff members have been trained to deal with any problems that may arise with this student:

_____

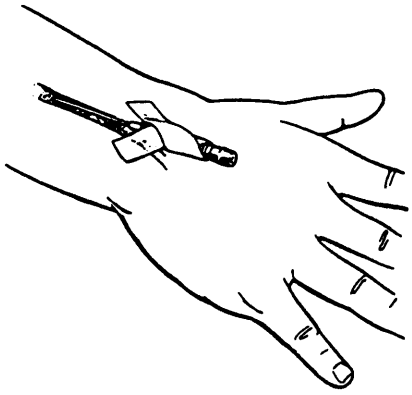
_____

_____

For more information about CVCs, consult the school nurse or the family. 6

Heparin Lock/ Intermittent Intravenous Device

PURPOSE



A heparin lock is a method of maintaining intravenous (IV) access when a student requires intermittent medication or fluids. An adaptor plug containing heparinized saline is inserted into the hub of the IV catheter. (Heparin prevents blood from clotting in the catheter.) The heparinized saline is replaced regularly by injecting a prescribed dose into the plug. This allows the student increased mobility. These IV catheters are used for short-term courses of medication/fluids.

SUGGESTED SETTINGS

Procedures such as dressing reinforcements, changes, and heparin flushes should be performed in the health room. The student's activity may be limited to prevent dislodging the IV catheter.

SUGGESTED PERSONNEL AND TRAINING

A health care assessment needs to be completed by the school nurse. State nurse practice regulations must be consulted for guidance on delegating health care procedures.

A registered nurse with proven competency-based training in appropriate techniques and problem management should administer heparin flushes and provide IV catheter care. Any school personnel with regular contact with a student with a heparin lock or IV catheter must receive general training that covers the student's specific health care needs, potential problems, and how to implement the established emergency plan.

The basic skills checklist on pages 21-22 can be used as a foundation for competency-based training in appropriate techniques. It outlines specific procedures step by step. Once the procedures have been mastered, the completed checklist serves as documentation of training.

THE INDIVIDUALIZED HEALTH CARE PLAN: ISSUES FOR SPECIAL CONSIDERATION

Each student's IHCP should be tailored to the individual's needs. The following section covers the procedures for heparin lock flushes and possible problems and emergencies that may arise. It is essential to review it before writing the IHCP.

A sample plan is included in this manual. It may be copied and used to develop a plan for each student. For a student with a heparin lock, the following items should receive particular attention:

- Protection of the IV site from bumping or other trauma
- Signs of IV site infiltration and infection
- Safe storage and disposal of intravenous supplies
- Medication and heparin/saline flush requirements
- Latex allergy alert
- Universal precautions (Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and student.)

Possible Problems that Require Immediate Attention

Observation	***Reason/Action***
IV dressing is wet; there is leakage of blood or fluid	*Male adaptor may be dislodged. IV catheter may be dislodged or IV site is infiltrated.* *Carefully remove dressing. If IV catheter is intact, apply new dressing. If adaptor is not contaminated, reconnect adaptor to catheter (if disconnected) and apply new dressing. If adaptor is contaminated, replace with a sterile adaptor. If IV catheter is not intact, consult family and/or physician and then follow guidelines for removal of IV catheter if ordered.*
IV site is tender, warm, swollen, or red	*The IV catheter may be displaced or dislodged, causing the intravenous fluid to enter the tissue. Notify the physician and/or family, who will give further instructions. If the IV catheter is to be removed, follow guidelines for removal.*
Pain with injection of heparin	*IV catheter may be infiltrated.*
Difficulty injecting saline or heparinized saline into catheter	*Needle may not be in hub properly. Catheter may be clotted. IV site may be infiltrated.* *Make sure needle is in hub properly. Gently press on plunger; if no results, stop injecting.* *Inspect IV site; if unable to flush or if IV site is infiltrated, notify physician and/or family. If the IV is to be removed, follow guidelines for removal.*
Redness/streaking up arm along vein	*May be phlebitis (infection of vein). Notify family and/or physician. Remove IV catheter if ordered.*

General Information Sheet

Students with Heparin Locks

Dear (teacher, lunch aide, bus driver):

_____ [Student's name] has a condition that requires an intravenous (IV) catheter or heparin lock. The IV catheter is a tiny plastic tube placed in a vein in the student's arm or hand. This is a way of giving the student medication or fluids. When the student is not receiving continuous intravenous fluids or medications, a special plug (i.e., heparin lock) is inserted into the end of the intravenous catheter to allow increased mobility while keeping the tube usable. The IV catheter is inserted into the student's vein by a physician or nurse and held in place by tape.

The student can receive medications at home, school, or the hospital. The student's activities may be limited so as not to dislodge the tube.

The following staff members have been trained to deal with any problems that may arise with this student:

_____

_____

_____

For more information about intravenous lines or heparin locks or the needs of this student, consult the school nurse or family.

Procedure for the Administration of a Heparin Flush

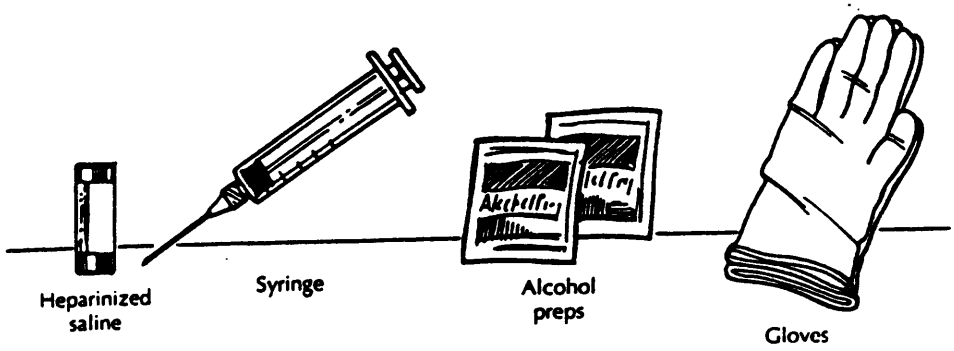
PROCEDURE

1. Wash hands.

POINTS TO REMEMBER

Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and the student.

2. Assemble equipment:



- IV catheter with male adapter (in place)
- Saline or heparinized saline (see student-specific guidelines for dosage)

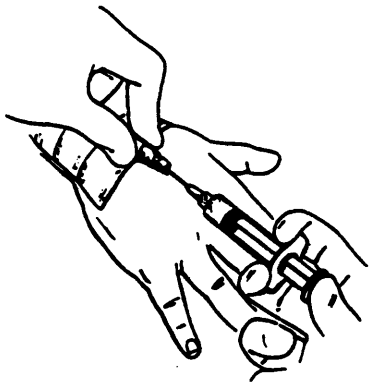
Identify size and type of IV device. Heparinized saline is available in single-dose vials with 10 units of heparin per cc of saline. Vial should be labeled for intravenous use.

- 3-ml syringe with a 21 to 23-gauge needle
- Two alcohol swabs
- Gloves
- Adhesive tape

3. Position the student and explain the procedure to the student according to his or her level of understanding.

By encouraging the student to assist in the procedure, the caregiver encourages him or her to achieve maximum self-care skills.

4. Wash hands. Put on gloves.



5. Cleanse top of heparinized saline container with alcohol swab.

6. Draw prescribed dosage of heparinized saline into syringe.

7. Cleanse catheter hub with alcohol swab.
8. Slowly inject prescribed dosage of saline or heparinized saline.

If student complains of pain with injection, inspect IV site. It may be infiltrated.

9. Remove syringe and needle and dispose of properly.
10. Reinforce dressing, if needed.
11. Remove gloves and wash hands.
12. Document the dosage, time, and condition of IV site on log sheet. 7

Report to the family any change in the student's usual pattern of tolerance of procedure.

Student's name: _____

Person trained: _____

Position: _____

Heparin Flush
Skills Checklist

Instructor: _____

Explanation/Return Demonstration	Expl./ Demo. Date	Explanation/Return Demonstration					
		Date	Date	Date	Date	Date	Date
A. States name and purpose of procedure							
B. Preparation:							
1. Identifies student's ability to participate in procedure							
2. Reviews universal precautions							
3. Completes at _____ time(s)							
4. Identifies where procedure is done							
5. Identifies possible problems and appropriate actions							
C. Identifies supplies:							
1. IV catheter and male adaptor							
2. Heparinized saline of prescribed concentration							
3. 3-ml syringe with a 21–23-gauge needle							
4. Two alcohol swabs							
5. Gloves							
6. Adhesive tape							
D. Procedure:							
1. Washes hands							
2. Assembles equipment							
3. Positions student and explains procedure							
4. Washes hands, puts on gloves							
5. Cleanses top of heparinized saline container with alcohol							
6. Draws prescribed dose of heparinized saline into syringe							
7. Cleanses male adaptor hub with alcohol swab							
8. Slowly injects dose of heparinized saline into hub							
9. Removes syringe/needle without dislodging IV catheter							
10. Disposes of syringe and needle in appropriate container							
11. If problems with injection, inspects IV site and removes IV catheter if infiltrated							
12. Reinforces dressing, if needed							
13. Removes gloves and washes hands							

(continued)

Format adapted from Children's Hospital Chronic Illness Program, Ventilator Assisted Care Program. (1987). *Getting it started and keeping it going: A guide for respiratory home care of the ventilator assisted individual.* New Orleans, LA: Author; adapted by permission.

Heparin Flush
Skills Checklist

Student's name: _____

Explanation/Return Demonstration	Expl./ Demo. Date	Explanation/Return Demonstration					
		Date	Date	Date	Date	Date	Dat.
14. Documents procedure and observations							
15. Reports any changes to family							

Checklist content approved by:

Parent/Guardian signature _____ Date _____

PROCEDURE FOR REMOVAL OF IV CATHETER

1. Wash hands	
2. Assemble equipment • **Gloves** • **Sterile Gauze** • **Bandage**	**Anticipating the tasks to be done, the risk involved, and the personal protective equipment needed will enhance protection of both the caregiver and student.**
3. Wash hands. Put on gloves.	**Explain procedure to student and have student participate as much as possible.**
4. Open sterile gauze and bandage.	
5. Remove dressing, being careful to secure catheter with one hand while removing tape with the other.	
6. Hold the hub or end of the catheter; slowly remove from vein.	
7. Apply pressure to the IV site.	**Hold pressure for at least 5 minutes until bleeding stops.**
8. Apply bandage.	
9. Dispose of catheter in appropriate receptacle.	
10. Remove gloves. Wash hands.	
11. Document procedure and condition of site.	**Reports to a family any change in the student's usual pattern.** [9]

NOTES

1. Information in this section has been reprinted by permission from:

   Porter, S., Haynie, M., Bierle, T., Caldwell, T.H., & Palfrey, J. S. (1997). *Children and youth assisted by medical technology in educational settings: Guidelines for care.* (2nd ed).Baltimore: Paul H. Brookes Publishing Co. All rights reserved. (Please refer to individual notes throughout the section for details concerning specific passages of text).

2. Ibid. (pp. 185-187). Pages 1-3 of this section.

3. Ibid. (pp. 191-192). Pages 4-5 of this section.

4. Ibid. (pp. 188-190). Pages 6-8 of this section.

5. Information on pages 9-10 of this section adapted or reprinted from:

   Children's Hospital Chronic Illness Program, Ventilator Assisted Care Program. (1987). *Getting it started and keeping it going: A guide for respiratory home care of the ventilator assisted individual.* New Orleans, LA.

   Porter, S., Haynie, M., Bierle, T., Caldwell, T.H., & Palfrey, J.S. (pp. 335-336).

6. Information on page 15 of this section reprinted from:

   Porter, S., Haynie, M., Bierle, T., Caldwell, T.H., & Palfrey, J.S. (p. 193).

7. Ibid. (pp. 194-198). Pages 16-19 of this section reprinted from:

8. Information on pages 20-21 of this section adapted or reprinted from:

   Children's Hospital Chronic Illness Program, Ventilator Assisted Care Program.

   Porter, S., Haynie, M., Bierle, T., Caldwell, T.H., & Palfrey, J.S. (pp. 337-338).

9. Information on page 22 of this section reprinted from:

   Porter, S., Haynie, M., Bierle, T., Caldwell, T.H., & Palfrey, J.S. (p. 197).